

REMARKS

In the Office Action the Examiner noted that claims 1-35 are pending in the application, and that claims 29-35 are withdrawn from consideration. The Examiner rejected claims 1-4, 7, 8, and 26-28, and objected to claims 5, 6, and 9-25. The Examiner's rejections are traversed below, and reconsideration of all rejected claims is respectfully requested.

Claim Rejections Under 35 USC §103

In item 2 on page 2 of the Office Action the Examiner rejected claims 1-4, 7, 8, and 26-28 under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 4,499,738, issued to Motoyama et al. (hereinafter referred to as "Motoyama") in view of U.S. Patent No. 5,103,650, issued to Jaster (hereinafter referred to as "Jaster"). The Applicant respectfully traversed the Examiner's rejections.

Claim 1 of the present application recites:

A cooling apparatus, comprising:
a compressor, a condenser, a first expanding unit, a second expanding unit, a third expanding unit, a first evaporator, and a second evaporator;
a first refrigerant circuit containing refrigerant discharged from the compressor and flowing into a suction side of the compressor through the condenser, the first expanding unit, the first evaporator, the second expanding unit and the second evaporator;
a second refrigerant circuit containing the refrigerant passing through the condenser and flowing into the suction side of the compressor through the third expanding unit and the second evaporator;
a flow path control unit installed at a discharge side of the condenser, switching a refrigerant flow path so that the refrigerant passing through the condenser flows through at least one of the first and second refrigerant circuits; and
a control unit selectively opening and closing the flow path control unit.

Therefore, the cooling apparatus recited in claim 1 of the present application comprises first and second refrigerant circuits. The first refrigerant circuit contains refrigerant flowing "through the condenser, the first expanding unit, the first evaporator, the second expanding unit and the second evaporator." The second refrigerant circuit contains refrigerant flowing "through the third expanding unit and the second evaporator." In other words, the second refrigerant circuit bypasses the first expanding unit, the first evaporator, and the second expanding unit.

This is in direct contrast to the refrigerator disclosed in Motoyama, which does not disclose a second refrigerant circuit which bypasses the first expanding unit, the first evaporator, and the second expanding unit. The Examiner states that "Motoyama et al., especially in Fig. 4,

discloses the claimed invention except for the recited order of the expanding units and the evaporators.” However, Figure 4 clearly shows that the refrigerator of Motoyama is not capable of bypassing the first expanding unit 16, the second expanding unit 17, and the first evaporator 10 (Figure 4). Motoyama discloses an electromagnetic valve 21 which allows a portion of the refrigerant to pass through a third expanding unit on the way to the second evaporator 7, wherein the portion of the refrigerant passing through this electromagnetic valve 21 does not pass through the second expanding unit 17 and the first evaporator 10. However, when flowing through the refrigerant circuit of Motoyama, at least a portion of the refrigerant necessarily flows through the first expanding unit 16, the second expanding unit 17, the first evaporator 10, and the second evaporator 7, regardless of whether the electromagnetic valve 21 allows any of the refrigerant to pass through the third expanding unit. Further, all of the refrigerant must pass through the first expanding unit 16, regardless of whether the electromagnetic valve 21 is open.

Thus, Motoyama does not disclose “a second refrigerant circuit containing the refrigerant passing through the condenser and flowing into the suction side of the compressor through the third expanding unit and the second evaporator.” Rather, as explained above, each of the refrigerant circuits in Motoyama includes the first expanding unit.

Further, claim 1 of the present application also recites “a flow path control unit installed at a discharge side of the condenser, switching a refrigerant path so that the refrigerant passing through the condenser flows through at least one of the first and second refrigerant circuits.” Therefore, the flow path control unit is installed between the condenser and any of the inputs of the expanding units. This is also in direct contrast to Motoyama, which clearly shows that the electromagnetic valve 21 is located downstream of the first expanding unit 16, and further downstream of the point where the two refrigeration circuits diverge (Figure 4). Therefore, the electromagnetic valve 21 of Motoyama is not capable of bypassing either of the first and second expanding units 16 and 17. Rather, it is only capable of allowing a portion of refrigerant to pass through the third expanding unit 53 on the way to the second evaporator 7, or preventing the portion of refrigerant from passing therethrough.

Jaster discloses a refrigeration system having three expansion throttles and evaporators respectively provided for a freezer compartment, a fresh food compartment, and an intermediate compartment (Abstract). These element are all connected in series in the refrigerant path (Abstract). Therefore, Jaster does not cure the deficiencies of Motoyama regarding claim 1 of the present application. The Examiner states that it “would be obvious to modify Motoyama et al so that the first evaporator 10 follows right after the first expanding unit 16, in view of Jaster, for

the purpose of generating more cooling from the evaporator 10.” However this does not cure the deficiencies discussed above. Even if the first evaporator 10 were moved to follow immediately after the first expanding unit 16, the second refrigerant circuit of Motoyama would then also include the first evaporator 10 along with the first expanding unit 16. In other words, the first expanding unit 16 and first evaporator 10 would both then be included in both refrigerant circuits, which is in direct contrast to claim 1 of the present application. Further, this would do nothing to cure the fact that Motoyama does not disclose “a flow path control unit installed at a discharge side of the condenser.”

Therefore, for at least the reasons presented above, neither Motoyama nor Jaster, either alone or in combination, discloses the features recited in claim 1 of the present application. Thus, the Applicant respectfully submits that claim 1 of the present application patentably distinguishes over the cited references, and respectfully requests the withdrawal of the §103(a) rejection.

Claims 2-4 and 7 depend from claim 1 and include all of the features of that claim plus additional features which are not taught or suggested by the cited references. Therefore, it is respectfully submitted that claims 2-4 and 7 also patentably distinguish over the cited references.

Claim 8 of the present application also features the first and second refrigeration circuits described in the arguments relating to claim 1, and recites “independently cooling the second cooling compartment by controlling the flow path control unit to allow the refrigerant to flow through the second refrigerant circuit in response to a temperature of the first cooling compartment reaching a target temperature.” As stated above, Motoyama is not able to independently cool the second cooling compartment by allowing refrigerant to flow through the second refrigerant circuit, because at least a portion of the refrigerant will always be passing through the first evaporator 10 (Figure 4). The second evaporator 7 cannot be “independently” cooled if this portion of the refrigerant is passing through the first evaporator 10. Therefore, it is respectfully submitted that claim 8 of the present application also patentably distinguishes over the cited references.

Claim 26 of the present application also recites the first and second refrigerant circuits as recited in claim 1, as well as “a flow path control unit installed at a discharge side of the condenser, switching a refrigerant path so that the refrigerant passing through the condenser flows through at least one of the first and second refrigerant circuits.” Therefore, it is respectfully submitted that claim 26 also patentably distinguishes over the cited references.

Claims 27-28 depend from claim 26 and include all of the features of that claim plus additional features which are not taught or suggested by the cited references. Therefore, it is respectfully submitted that claims 27-28 also patentably distinguish over the cited references.

Claims Objected To By The Examiner

In item 3 on page 2 of the Office Action the Examiner objected to claims 5-6 and 9-25 as being dependent upon a rejected base claim, but indicated that these claims would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 5-6 depend from claim 1, and claims 9-25 depend from claim 8. As stated above, claims 1 and 8 both patentably distinguish over the cited references. Therefore, claims 5-6 and 9-25 also patentably distinguish over the cited references. Thus, the Applicant respectfully requests the withdrawal of the Examiner's objections to these claims.

Summary

It is respectfully submitted that none of the cited references, either taken alone or in combination, disclose or suggest the present claimed invention. There being no further outstanding objections or rejections, it is respectfully submitted that the application is in condition for allowance. An early action to that effect is courteously solicited.

Finally, if there are any formal matters remaining after this response, the Examiner is requested to telephone the undersigned to attend to these matters.

If there are any additional fees associated with filing of this Amendment, please charge the same to our Deposit Account No. 19-3935.

Respectfully submitted,

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